

AIRPORT BRIDGE AND LIFT

CLAIMS

1. A system for use for the passage of persons and items between an airport building and an airplane, comprising:

a passage structure supported for rotation about a vertical axis next to said building, said passage structure comprising a rotunda, a bridge and a cab;

said cab having a first port adapted to be coupled to a port of an airplane for the passage of persons;

said bridge comprising a plurality of sections with each section having a rear end and a front end with a passage formed therethrough;

said plurality of sections comprising a rear section having its rear end coupled to said rotunda and a forward section having its forward end coupled to said cab;

each of said sections being telescopically coupled to an adjacent section with said front end of said section adjacent to said forward section being movable within said forward section, such that said bridge may be expanded and contracted;

said passage structure having a second port for the passage of luggage and other items;

a housing coupled to the exterior of said passage structure with an opening located in line with said second port;

said housing having an opening in a lower portion;

a carriage supported for movement in said housing for supporting luggage and other items;

means for lowering said carriage downward to the ground and upward to the second port for transporting luggage and other items between said passage structure and the ground.

2. The system of claim 1 wherein said second port is located in the rotunda.
3. The system of claim 2 wherein said housing bears on the ground and said housing is coupled to a nonrotating portion of said rotunda.
4. The system of claim 1 wherein said lower opening has a door.
5. The system of claim 1, wherein:
 - said housing comprises an upper end and a lower end with surrounding side walls located between said upper and lower ends defining an interior upper zone and a lower zone;
 - said second port extends into said housing in communication with said interior upper zone;
 - support structure coupled to said housing for coupling said housing to the passage structure;
 - said carriage being supported for movement between said interior upper zone and said lower zone;

said carriage comprising a plurality of leg members having lower ends;

a platform for supporting luggage and other items coupled to said lower ends of said leg members by coupling means such that said platform is located below said lower ends of said leg members and can engage a floor when said carriage is lowered to the lower zone;

said lower ends of said leg members and said platform may move toward and away from each other respectively;

an electric motor;

an electrical switch coupled to said carriage at a position to be controlled by said platform when said platform engages the floor for shutting off said motor.

6. The system of claim 5, comprising:

a winch coupled to said housing;

a flexible line having a first end coupled to said carriage and a second end coupled to said winch;

said electric motor being a reversible motor for rotating said winch in a first direction to lower said carriage and for rotating said winch in a second direction for raising said carriage;

a safety assembly for preventing said carriage from falling in the event said flexible line breaks;

said safety assembly comprising a movable catch;

spring means for normally urging said catch in a first position to prevent said carriage from falling;

a solenoid for moving said catch to a second position to allow said carriage to move from an upper position to a lower position;

said catch being movable from said second position to said first position by said carriage when said carriage is moved upward to an upper position.

7. An apparatus for use with an elevated structure for lowering and raising luggage between an upper position and a lower position, comprising:

a housing having an upper end and a lower end with surrounding side walls located between said upper and lower ends defining an interior upper zone;

a port extending into said housing above said lower end in communication with said interior upper zone;

support structure coupled to said housing for supporting said housing including said lower end above and spaced from the ground;

said lower end portion of said housing having a passageway formed therethrough;

a carriage supported for movement between said interior upper zone and a floor by way of said passageway, for carrying luggage and other items between said interior upper zone and the floor;

control means for moving said carriage between said interior upper zone and the floor;

said carriage comprising a plurality of leg members having lower ends;

a platform for supporting luggage and other items coupled to said lower ends of said leg members by coupling means such that said platform is located below said lower ends of said leg members and can engage the floor when the carriage is lowered;

said lower ends of said leg members and said platform may move toward and away from each other respectively;

an electric motor;

an electrical switch coupled to said carriage at a position to be controlled by said platform when said platform engages the floor for shutting down said motor.

9. The apparatus of claim 8, comprising:

a winch coupled to said housing;

a flexible line having a first end coupled to said carriage and a second end coupled to said electric motor;

said electric motor being a reversible motor for rotating said winch in a first direction to lower said carriage and for rotating said winch in a second direction for raising said carriage;

a safety assembly for preventing said carriage from falling in the event said flexible line breaks;

said safety assembly comprising a movable catch;

spring means for normally urging said catch in a first position to prevent said carriage from falling;

a solenoid for moving said catch to a second position to allow said carriage to move from an upper position to a lower position;

said catch being movable from said second position to said first position by said carriage when said carriage is moved upward to an upper position.

10. The apparatus of claim 9, comprising:

- an electrical system for moving said bridge;
- an opening leading to said interior of said housing of said lift from said cab;
- a door for opening and closing said opening;
- circuitry including a first switch for sensing when said door is in a closed position and a second switch for sensing when said carriage is in an up position and for allowing said electrical system to move said bridge only if said door is in a closed position and said carriage is in an up position.